

Progress Report

Areawide IPM of the Russian Wheat Aphid and Greenbug

A Summary of Program Activities During Phase I (October 2001 - September 2002) and the First Year of Phase II (October 2002 - September 2003)

(Submitted December 8, 2003)

Executive Summary

This report includes demonstration, evaluation, and research activities of the AWPM of the Russian wheat aphid and Greenbug project for Phase I (October 1, 2001 – September 30, 2002) and the first year of Phase II (October 1, 2002 – September 30, 2003). During this time period we made greater progress towards completing project objectives than originally described in our project proposal. However, there were unanticipated developments, such as detection of a new strain of the Russian wheat aphid, which required minor shifts in program direction. This progress report does not include information on organizational meetings and activities. However, the end products of many of those meetings and activities are the demonstration, evaluation, and research activities summarized in the report. Integration of information from all demonstration and evaluation activities is incomplete in the report, however such integration is an ongoing activity of the AWPM team. The most significant AWPM activities and observations during the reporting period are as follows:

1) Greenbug populations were abnormally low throughout the region during the 2002-2003 growing season. In spite of the low greenbug populations, which made it difficult to assess differences in greenbug populations between diversified and wheat only croppings systems, natural enemies of the greenbug were generally more abundant and diverse in diversified as compared to wheat only systems. The difference was more evident when the cropping system was viewed from the scale of the landscape within which a demonstration field was embedded rather from a within field scale. In other words, crop rotation at a whole farm scale or even a multi-farm scale was associated with greater populations of greenbug natural enemies in wheat fields, and crop rotation at a within field scale was either less important or overshadowed by the effects of diversification at the larger scale.

2) A new strain of Russian wheat aphid, which causes damage to previously resistant winter wheat varieties, appeared in AWPM demonstration zones 1 and 2. An important and previously unanticipated objective of the AWPM project will be to determine the geographic extent and economic impact of the new strain, and to assess existing sources of resistance against the new strain. Furthermore, the AWPM program will serve as a platform for technology transfer of previously developed pest management tools, e.g. biological control, sequential sampling and economic thresholds, and an area-wide pest alert and forecasting network, which are essential components for sustainable management of the aphid.

3) Socioeconomic evaluation accomplishments included recruiting 147 wheat producers to participate in project, and completing focus groups and cost-of-production interviews with those participants. During the first year of Phase II (January and March, 2003), 20 focus groups were conducted, each involving 6-10 producers at a particular demonstration location. Focus group discussions were transcribed and transcripts were entered into a database program and coded for further synthesis and analysis. We are still in the process of generating a complete focus group summary report. We also completed the first of four annual cost-of-production interviews with all but two of the 147 participants. We are currently generating farm budgets from interviews, which will allow us to compare the costs and returns associated with wheat-only and diversified cropping systems. This baseline data will be important background information for evaluating changes in production strategies occurring in the suppression region as a result of the program.

4) Important research and development progress included: A) GIS mapping of all demonstration sites to facilitate quantitative evaluation of effects of field and landscape scale cropping system diversity on greenbugs, Russian wheat aphids, and other pests, and the effectiveness of biological control; B) field scale tests using multi-spectral remote sensing to detect greenbug infestations in wheat were completed, which showed promise for developing an area-wide system for monitoring greenbug infested fields; C) field and laboratory studies to determine the dynamics of aphid natural enemies in diversified and wheat only cropping systems were initiated to facilitate prediction of cropping system configuration on biological control of greenbugs and Russian wheat aphids; and D) an Oracle/Visual Basic database management system was developed for project wide assimilation of demonstration site data and near real time dissemination of pest status information to growers throughout the suppression area.

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